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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/007,103	12/04/2001	Shai Abramson	FRND 110	3555

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EXAMINER

MARC, MCDIEUNEL

ART UNIT	PAPER NUMBER
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3661

DATE MAILED: 12/22/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/007,103

Applicant(s)

ABRAMSON ET AL.

Examiner

McDieunel Marc

Art Unit

3661

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 04 December 2001.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 2-62 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 7-35, 42-47 and 52-62 is/are allowed.
- 6) ☒ Claim(s) 36-41, 48 and 51 is/are rejected.
- 7) ☒ Claim(s) 49 and 50 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All   b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 26.
- 4) ☒ Interview Summary (PTO-413) Paper No(s). 26.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

**DETAILED ACTION**

1. This is in response to a letter for patent filed on December 04<sup>th</sup>, 2001, in which claims **2-62** are presented for examination. Claims **2-62** are pending in the letter.
2. Claim 1 in the amendment filed on October 28, 2003, on paper number 27 has not been, because claim had been cancel on the amendment filed on February 19, 2003, on paper number 2.
3. Claims 42-44 are objected to because of the following informalities:  
In claim 44, line 7, the word "angling" has not been recited in the specification;  
In claims 2-6 will not be treated on the merit, and the allowability is withdrawn, because they depend on a cancel claim 1. Appropriate correction is required.  
Dependent claims not specifically objected are objected as being dependent upon an objected base claim.
4. The following is a quotation of the second paragraph of 35 U.S.C. 112:  
The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
5. Claims **36-41** are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Where applicant acts as his or her own lexicographer to specifically define a term of a claim contrary to its ordinary meaning, the written description must clearly redefine the claim term and set forth the uncommon definition so as to put one reasonably skilled in the art on notice that the applicant intended to so redefine that claim term. *Process Control Corp. v. HydReclaim Corp.*, 190 F.3d 1350, 1357, 52 USPQ2d 1029, 1033 (Fed. Cir. 1999). The term "line" in claim 36, lines 3-6 are used by the claim to mean "wire", while the accepted meaning is "electrical line." The term is indefinite because the specification does not clearly redefine the term. It is not sure as to what "line" the limitation is directed. See the term "line" on page 1, line 10, page 4, lines 16 and 25, page 7, line 26, page 32, lines 11 and 30. Furthermore, the inventive concept of claim 36 relies upon figure 23, and the word "line" or "wire" has not been described in the description of figure 23 and the specification. Also "movement of said line" in claim 36, line 5 being taken as vague and indefinite. Dependent claims not specifically rejected are rejected as being dependent upon a rejected base claim.

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

7. Claim **48 and 51** are rejected under 35 U.S.C. 102(e) as being anticipated by **Jones et al.** (U.S. Pub. No. **2003/0025472 A1**).

As per claim 48, an apparatus for autonomous operation over an area (see fig. 3) comprising:

a drive system (see fig. 3, particularly motor(s)); and  
at least one sensor in communication with said drive system (see fig. 3, particularly the sensors, particularly 8-bit processor and motor(s)), said sensor configured for detecting at least one signal for confining said apparatus to operate in a predetermined location with said area (see all fig. 3 and figs. 1 (A-D)). With respect to claim 51, wherein said at least one sensor is an infra red light sensor (see sections [0044], [0047], [0050], [0051], [0076] and page 10, col. 1, claim 8)

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation

under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

10. Claims **36-38** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Jones et al.**

As per claim **36**, **Jones et al.** teaches multi-mode coverage for an autonomous robot having an apparatus for autonomous operation over an area (see fig. 3) comprising:

a control system (see fig. 3, particularly 8-bit processor);

a line (see fig. 3, particularly all the arrow), please note these arrow are being considered as line/wire; and

a directional detection member including a sensor (see fig. 3, particularly the sensors), said sensor coupled to said line and said control system (see fig. 3, particularly the sensors and particularly 8-bit processor), directional line (see fig. 3, particularly the sensors and particularly 8-bit processor), please note that the direction of the arrow being taking as directional line. Although, *Jones et al.* teaches directional line, but implicitly teaches the limitation of a sensor configured for detecting the

directional movement of said line and signaling said control system with a signal corresponding to said directional line (see fig. 3, particularly sensors and arrows), note that the sensors and arrows are considered as moveable elements.

It would have been obvious to a person of ordinary skill in the art at the time of the invention to modify and interpret the arrow/line of the autonomous robot of Jones *et al.*, because this modification/interpretation on the line would have been a desired feature in connecting the elements/components, thereby improving the efficiency and the reliability of the robotic vacuum cleaner.

As per claim 37, Jones et al. teaches wherein said control system is configured for signaling a drive system for moving said apparatus in correspondence with said directional movement of said line (see fig. 3, particularly sensors and arrows), note that the sensors and arrows are considered as moveable elements.

As per claim 38, Jones et al. teaches wherein said line includes wire (see fig. 3, particularly arrows).

11. Claims 39 is rejected under 35 U.S.C. 103(a) as being unpatentable over Jones *et al.* as applied to claim 38 above, and further in view of Donaldson (U.S. Pat. No. 6,234,418).

As per claim 39, Jones et al. teaches essential feature of the claimed invention as claimed, but Jones *et al.* does not specifically teach a directional detecting member additionally includes: a take-up roller for receiving said line in a wrap around manner.

However, Donaldson teaches a system wherein said directional detecting member additionally includes: a take-up roller for receiving said line in a wrap around manner (see figs. 2, 6 and col. 2, line 48 – to – col. 3, line 5).

It would have been obvious to a person of ordinary skill in the art at the time of the invention to modify the teaching of Jones *et al.* with the line storage device of Donaldson, because this modification would have enhanced Jones' *et al.* teaching so that a wrapping portion wraps around the line, thereby improving the efficiency and the reliability of the robotic vacuum cleaner.

12. Claims 40-41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jones *et al.* as applied to claim 39 above, and further in view of Donaldson, Woodgate (U. S. Pat. No. 4,580,766) and Zurcher (U. S. Pat. No. 4,875,639)

As per claim 40, Jones et al. and Donaldson teach essential feature of the claimed invention as claimed, but Jones *et al.* does not specifically teach a line hauling wherein said take-up roller is spring biased.

However, Woodgate teaches a line or net hauling apparatus wherein said take-



up roller is spring biased (see abstract, figs. 1, 4 and 7), but the roller is not a spring biased.

It would have been obvious to a person of ordinary skill in the art at the time of the invention to modify the teaching of Jones *et al.* and the line storage device of Donaldson with the line-carrying spool assembly of Woodgate, because this modification would have enhanced Jones' *et al.* and Donaldson's teachings so that the line or net hauling comprising a rotatable member, thereby improving the efficiency and the reliability of the robotic vacuum cleaner.

Although, Jones et al., Donaldson and Woodgate teach essential features of the claimed invention, but they do not specifically teach a roller with spring biased.

However, Zurcher meet that deficiency by showing in figure 5 a roller with spring (see abstract and fig. 5).

It would have been obvious to a person of ordinary skill in the art at the time of the invention to modify the teaching of Jones *et al.*, Donaldson and Woodgate, with the teaching of Zurcher, because this modification would have enhanced Jones' *et al.* Donaldson's and Woodgate in order to introduce a spring, thereby improving the efficiency and the reliability of the robotic vacuum cleaner.

As per claim 41, Donaldson in view of Jones, Woodgate and Zurcher a sytem wherein and end of said line is received by said take-up roller (see figs. 2, 6 and col. 2,

line 48 – to – col. 3, line 5).

13. Claims **7-35, 45-47 and 52-62** are allowed.

14. Claims **42-44** would be allowable if rewritten or amended to overcome the minor objection(s) set forth in this Office action.

15. Claims **49 and 50** are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

16. The following is a statement of reasons for the indication of allowable subject matter:

While with respect to claim 7, Jones *et al.* an apparatus for autonomous operation over an area (see fig. 3) comprising: a drive system (see fig. 3, particularly motor(s)); and a controller in communication with said drive system (see fig. 3, particularly 8-bit processor), said controller including a processor programmed (see fig. 3, particularly 8-bit processor), the prior art of record fail to teach or fairly suggest a system that provides at least one scanning pattern for a portion of said area from a first point; signal said drive system to move along a path at least proximate the periphery of

the scanned portion to a second point, said second point at a different location than said first point; and provide at least one scanning pattern for a portion of said area from said second point. With respect to claim 11, a nozzle for suction of particulates comprising: a body, said body including a first end and a second end, said first end including a neck, and said second end including an upper edge and a lower edge defining an opening therebetween; a lip extending at least substantially parallel to said opening along said upper edge and extending at least partially beyond said lower edge of said opening, said lip tapering upward from a portion of greater thickness to portions of lesser thickness, said lip configured for creating a flow cavity to be formed with the floor or surface over which said nozzle traverses. With 16, a method for area coverage by an autonomous machine comprising: scanning a first portion of said area in accordance with at least one scanning pattern; analyzing said first portion for an opening to a second portion of said area; and moving along a path at least proximate to the periphery of said first portion to and through said opening to said second portion of said area. With respect claim 22, a method for area coverage by an autonomous machine comprising: scanning a portion of said area in accordance with at least one scanning pattern, from a first point; moving along a path at least proximate the periphery of said scanned portion to a second point, said second point at a different location than said first point; and scanning a portion of said area in accordance with at least one scanning pattern, from said second point. With respect to claim 26, An obstacle detection system

for an autonomous cleaning machine comprising: a control system; a nozzle, said nozzle including a first end for receiving particulate inflow, and a second end for communicating with a suction generating unit, said second end including arms; a height adjustment system coupled to said first end of said nozzle, said height adjustment system in communication with said control system; and receiver portions configured for receiving said arms in a pivotal engagement, at least one of said arms and said respective receiver portions and said arms including first electrically conducting portions in electronic communication with said control system; and at least one of said arms mounted in said respective receiver portion so as to define an open circuit when said at least one arm is at a first position in said respective receiver portion, and defining a closed circuit when said at least one arm is at a second position, where said first electrically conducting portions are in contact with each other. With respect to claim 31, an obstacle detection system for an autonomous cleaning machine comprising: a control system; a nozzle, said nozzle including a first end for receiving particulate inflow, and a second end for communicating with a suction generating unit, said second end including arms; a height adjustment system coupled to said first end of said nozzle, said height adjustment system in communication with said control system; and receiver portions configured for receiving said arms in a pivotal engagement, at least one of said arms and said respective receiver portions and said arms including first electrically

conducting portions in electronic communication with said control system; and at least one of said arms mounted in said respective receiver portion so as to define a closed circuit when said arm is at a first position in said respective receiver portion, and defining an open circuit when said at least one arm is at a second position, where said first electrically conducting portions are out of contact with each other. With respect to claim 42, an apparatus for autonomous operation over an area comprising: at least one first transmitter; at least one second transmitter; at least one receiver for receiving signals originally transmitted from both of said at least one first transmitter and said at least one second transmitter; said at least one first transmitter offset from said at least one second transmitter at a distance such that detection of a signal by said at least one receiver from said at least one first transmitter absent detection of a signal from said at least one second transmitter corresponds to detection of a door or entryway. With respect to claim 45, a system for detecting the presence of an entryway comprising: an apparatus for autonomous operation over an area comprising: at least one first transmitter; at least one second transmitter; at least one receiver for receiving signals originally transmitted from both of said at least one first transmitter and said at least one second transmitter; said at least one first transmitter offset from said at least one second transmitter at a distance such that detection of a signal by said at least one receiver from said at least one first transmitter absent detection of a signal from said at least one second transmitter corresponds to detection of a door or entryway; and at least one retroreflector for positioning at least proximate to said entryway. With respect

to claim 52, a system for limiting coverage of an apparatus to a portion of an area comprising: a sensor configured for detecting at least one signal for confining said apparatus to operating in a portion of an area; and transmitter for sending at least one signal corresponding to at least one boundary of said portion of said area. With respect to claim 56, a method for detecting a surface type comprising: shutting down a motor for a predetermined time period to cease rotation of said at least one rotating member; and measuring a back electromotive force on said motor provided by the resistance of a surface to said rotation of said at least one rotating member. With respect to claim 60, an apparatus for surface detection comprising: at lease one sensor configured for measuring back electromotive for on a motor when rotation of said rotating member is ceased, said at least one sensor configured for signaling said control system for restating said motor and rotating said at least one rotating member at a speed corresponding to the measured back electromotive force on said motor in combination with the other features in elements of the claimed invention.

17. The following is a statement of reasons for the indication of allowable subject matter:

The prior art of record fail to teach or fairly suggest an apparatus wherein said at least one sensor is configured for detecting tow signals for confining said apparatus to operate in said predetermined location within said area as cited in claim 49. With

respect to claim 50, the apparatus, wherein said tow signals include, a first signal corresponding to inside of said predetermined location within said area and a second signal corresponding to outside of said predetermined location with said area in combination with the other features of the claimed invention.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to McDieunel Marc whose telephone number is (703) 305-4478. The examiner can normally be reached on 6:30-5:00 Mon-Thu.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, William A. Cuchlinski, Jr. can be reached on (703) 308-3873. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 305-7687 for regular communications and (703) 305-7687 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-1113.

  
McDieunel Marc

December 17, 2003

MM/

  
William A. Cuchlinski, Jr.

WILLIAM A. CUCHLINSKI, JR.  
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